Symons's
Meteorological Magazine.

No. 497. JUNE, 1907. Vol. XLII.

Wilhelm von Bezold.

Munich, 1837—Berlin, 1907.

Professor von Bezold, the eminent Director of the Prussian Meteorological Institute, died in his seventieth year, at Charlottenburg, after a long illness, on February 17th. He was born at Munich, and after graduating at Göttingen in 1860, returned to his native city, where he was engaged for many years as lecturer and professor of theoretical physics at the University. His first important investigation was on twilight phenomena, undertaken in consequence of the interest aroused by the far-famed afterglows visible in the Alps, and this was published in 1864. A few years later his attention was directed to the peculiarities of thunderstorms and he commenced an elaborate study, based largely on the statistics of insurance companies, of the frequency and periodicity of the phenomena. In 1878 he was appointed to reorganize and direct the meteorological service of Bavaria and remained in this office until 1885. In that year he was called to Berlin, on the death of Professor Dove, to undertake similar duties for the Prussian Meteorological Service, for it may be news to some of our readers to learn that there is no uniform imperial meteorological organization in Germany. In Berlin Dr. von Bezold filled the double position of Professor of Meteorology in the University and Director of the Prussian Meteorological Institute.

He continued his researches on the frequency of thunderstorms for a time, and gradually devoted himself more and more exclusively to the detailed discussion of the thermodynamics of the atmosphere and to terrestrial magnetism. While his later writings appeal mainly to the mathematical student, and have led to the opinion that the work of von Bezold lay rather in the advancement than in the spread of meteorological science, he was also the author of many papers of a more popular character, not a few of these being preliminary sketches which he afterwards elaborated in his classic memoirs. In his work at Berlin the late Director had the advantage of the co-operation of gifted colleagues, amongst whom Professor Hellmann, who had charge of the great rainfall system of Prussia, Professor Assmann, who had charge of the aeronautical observatory (now an independent institution), Professor Sprung of the instrumental department in Potsdam, and Professor A. Schmidt of the the magnetic observatory, may be mentioned.

RADIATION PHENOMENA IN SOUTH AFRICA.

MR. JAMES LYLE, of Grey College, Bloemfontein, who has charge of the Meteorological Service of the Orange River Colony, forwards for publication the two following letters, which were addressed to him by observers in the Colony, and we print them with great pleasure, recognising the growth of interest in the science of the weather which is taking place amongst the people as well as amongst the governments of South Africa.

During the last few years I have often observed heavy storm-clouds breaking over the Mabula mountains, about eight miles east from here, and wish to make known to you an unusual sight I saw this afternoon about 3 p.m. Heavy dark clouds were massed above these hills, with a gentle east wind blowing, when I observed what appeared like a jet descending from the clouds; shortly after, another appeared, and within five minutes the ends disappeared behind the hills like two gigantic kite tails and soon became obscured by heavy rain which began to fall.

I am sending you a rough sketch of the cloud and jets. Could you give me any information as to what it likely was?

A heavy shower of hail appeared to have fallen on Mr. Wright's farm in the Lady Brand District, over which the storm had taken its course. Two hours after the storm the hail on the veldt, although ten miles distant, had the appearance of a lake. Considerable damage must have been done to the growing crops and fruit trees.

Lions Rump, 12th November, 1906. W. F. GEBHARDT.

Lions Rump is situated in the Mabula mountains on the border of Basuto Land, and Mr. Lyle points out that 3 p.m. is the usual hour for thunderstorms and radiation phenomena generally. The sketches, which we are sorry we cannot reproduce, present very much the appearance of a tornado cloud, the "tails" being more slender and more inclined to the horizon than the waterspouts represented in Captain Page's article on p. 47 of our April number.

I thought perhaps you might like to have further particulars of the terrific hailstorm that passed over this district last Wednesday, December 19th.

I was away from this farm on that afternoon and only saw the storm in the distance, so cannot tell exactly how long it lasted, though I believe it was under half-an-hour.

The storm came from the N.W., and has devastated all the farms from Ficksburg to Brindisi, and apparently its track varied in width from 1½ to 3 miles. The hailstones are said to have been as large as hen's eggs, and all cultivated lands on this farm are pitted thickly with marks of this size. The corrugated iron roof on the stable here is deeply indented, and the rain gauge you sent me looks as if it had been knocked about with a hammer.

I am glad to say we lost no stock, though a neighbour this morning informed me he had a horse, a calf and five sheep killed by the hail, and his neighbour had also lost several sheep.

H. C. B. SPARROW.

Krauskloof, Ficksburg, O.R.C., December 21st, 1906.

Mr. Lyle points out that the hours, the direction and the breadth of the hailstorm are all quite usual. He has seen marks of hailstones on the land last for weeks, and cases are known of corrugated iron being perforated by angular hail. The rain gauge referred to was a copper instrument of the Meteorological Office pattern.

We may mention that exact observations of phenomena such as those described above are of real value, and we would urge on observers the importance of having a pocket camera within reach and photographing the effects described before they disappear. In the case of hail it is particularly important that some coins, or a footrule or other object of known size, should be placed amongst the hailstones so as to leave no doubt possible as to the size.

THE NEW PREMISES FOR THE METEOROLOGICAL OFFICE.

We referred in our number for October, 1906, (Vol. 41, p. 165) to the proposed removal of the Meteorological Office from Victoria Street to South Kensington, and we now find some particulars of the new site in an article published in the *Morning Post* of May 21st, from which we extract the following :—

On referring to the Civil Service Estimates submitted to Parliament this session there is found under Sub-head A—New Works, Alterations, Additions, and Purchases—the item "Meteorological Office—Erection of Offices at South Kensington." The original estimate of the cost of the new office is given at £10,580, but of this sum the vote required for the current financial year is only £500, leaving £10,080 to be voted in subsequent years.

When it is stated that the spot selected for the future home of the Weather Department forms the south corner at the junction of Exhibition Road and Imperial Institute Road, surrounded by such magnificent piles of buildings as the Natural History Museum, the Victoria and Albert Museum, the Imperial Institute, &c., it is pretty obvious that £10,000 will go a very little way, indeed, towards providing an edifice at all comparable with its great neighbours. It is, therefore, a relief to learn on enquiry that the sum allotted by the Treasury for accommodating the Meteorological Office forms only a small portion of the cost of a large building which it has been decided to erect. . . . Plans have been prepared for the erection of a block of buildings on the spot mentioned above, the greater part to be occupied as the District Post and Telegraph Office for South Kensington, and the upper portion to be the National Meteorological Office provided with ample space for the staff and for visitors, and also with a separate library accommodation and convenient arrangements for the proper display of charts and diagrams. To the general reader the association of the two public services, the Post and the Weather, may not at first sight be obvious, but it is, for all that, a very real one. The telegrams to and from the Meteorological Office involve an expenditure of little short of £2,000 per annum, and as promptness is

essential in the receipt and despatch of reports, storm warnings, &c., it has thus far been necessary to provide private wires and instruments and a staff of telegraph clerks, so that the total cost of the telegraphic work of the establishment forms a very large proportion of the Parliamentary grant of £15,300 a year, for the Postmaster-General insists upon charging for providing private wires and instruments on the same scale as for the general public. With the transfer of the office to South Kensington the whole of this extra expense will be saved, the telegraphic work being performed by the Post Office staff in a neighbouring room. The public will very naturally suppose that there will also be a saving in the rent of the premises, that in a Government building a national department would be provided with quarters free of cost. But this is not so. The Treasury Authorities are too wide-awake to be caught napping on this point. Sir George Murray was instructed to state that "My Lords are favourably disposed to the proposal that premises shall be constructed for the Meteorological Office in a block of buildings to be erected at South Kensington to contain a post-office; and my Lords, on present information, believe that the rent payable by the Committee of such a building would not exceed by any considerable sum the amount expended by the Committee on the rent of their present premises." The Victoria Street rental is, it appears, £635 per annum, so that it looks as if my Lords mean to charge about 7 per cent., perhaps more, per annum on the estimated cost of new premises.

ROYAL METEOROLOGICAL SOCIETY.

THE first of the afternoon meetings for the present session was held on Wednesday, May 15th, at the Society's rooms, 70, Victoria Street, Westminster; Dr. H. R. Mill, President, in the chair.

In opening the meeting the President paid a tribute to the life and work of Dr. A. Buchan, F.R.S., the first recipient of the Society's Symons' Gold Medal, whose death had just been announced.

Dr. H. R. Mill read a paper on "The Standard Rain Gauge, with Notes on other Forms." When the late Mr. Symons founded the British Rainfall Organization, forty-seven years ago, such observations as were being carried on were made with rain gauges of the most varied patterns, set up at any height from the ground that suggested itself to the observer, and read irregularly at almost any hour of the day or night. Since that time there has been a steady approximation to uniformity, and now the greater number of rain gauges in use are of a few definite patterns, set for the most part at nearly the same height above the ground. Dr. Mill strongly recommends the Snowdon pattern of rain gauge, which is 5 inches in diameter, has a vertical rim to the funnel of 4 inches, and has an inner can and also a bottle. The larger Meteorological Office pattern of similar shape but 8 inches in diameter is equally accurate but unnecessarily large. He does not recommend rain gauges with shallow funnels, nor the Glaisher pattern, the latter being par-

ticularly liable to give readings that are much too high when it begins to go out of repair.

Mr. J. W. Lovibond read a paper "On a Method and Apparatus for measuring Fog Densities." The method is based on the power of selective absorption of suitably coloured glass. When this has been graded into mechanical scales of equivalent colour value, a beam of white light can be progressively absorbed to extinction and the luminous value of each successive absorption stated in quantitative terms. This analytical power also applies to the colour constituents of the beam.

Colonel J. E. Capper, R.E., C.B., gave an account of a captive balloon being struck by lightning at Farnborough during a thunderstorm on April 11th. The lightning flash appeared to travel along the wire until it reached the wagon; then a sudden bright light appeared and ran right up the wire into the clouds by which the balloon was hidden. The wire was fused, and burnt entirely away where it first touched the iron pulleys which guide the wire when running out. One side of the balloon and net was burnt, probably owing to the hydrogen catching fire.

Professor A. Herschel gave an account of a remarkable excavation made by lightning in peat earth on August 2nd or 3rd, 1906, in a moorland district of Northumberland. A large hole 4 or 5 feet in diameter was found on a flat part of the moor, radiating from which there were six or seven furrows, and pieces of turf were thrown in various directions. The largest turf, about 3 feet in diameter and 1 foot thick, was lying 26 yards away, and other pieces were lying around within 20 yards of the hole. On excavating the hole it was found that a number of small holes radiated to various depths.

The discussion on the various papers was joined in by the President, Mr. F. C. Bayard, Mr. E. Gold, Mr. W. Greathead, Mr. A. Hands, Professor A. Herschel, Mr. J. Hopkinson, Mr. R. Inwards, Mr. B. Latham, Mr. W. Marriott, and Mr. W. B. Tripp.

The following gentlemen were elected Fellows of the Society:—Mr. C. J. Davies, Rev. W. Esdaile, M.A., Shaikh Abul Fazl, M.A., LL.D., Mr. K. Nishizawa, Mr. R. Rhodes, and Mr. R. A. Ryves.

Correspondence.

To the Editor of Symons's Meteorological Magazine.

SNOW IN JUNE.

I THINK it will interest you to hear that snow fell in Farnham about 11.30 a.m. on the 3rd of this month. I did not see it myself, but I have it from a reliable witness.

GEO. CHRYSTIE.

Short Heath Lodge, Farnham, Surrey, June 6th, 1907.

THE ENERGY OF STORMS.

THERE is a statement in your Magazine for May which should not pass without comment. The question whether the heat set free by the condensation of vapour is or is not sufficient to provide the energy of a cyclone, is one that can be settled by a direct and simple calculation, and does not depend on the opinion of the best or the worst thinkers. The principles involved and the numerical quantities required can be found in any good text-book on physics.

The heat set free by the condensation of one pound of vapour, under average conditions of temperature, will raise the temperature of 600 lbs. of water 1° C. Taking Joule's equivalent at 1390 for 1° C., this gives 600×1390 ft. lbs. of energy for each pound condensed. Now, a rainfall of ·01 in. deposits ·052 lbs. on each square foot of surface, and hence provides $600 \times 1390 \times \cdot052 = 43{,}368$ ft. lbs. of energy for each square foot.

The mass of air resting on each sq. ft. is about $15 \times 12 \times 12$ lbs., and hence the energy produced by the formation from vapour of ·01 in. of rain can raise the whole weight of air over the rainfall area $\frac{43368}{12 \times 12 \times 15} = 20{\cdot}8$ ft., or impart to it a velocity due to a fall of 20·8 ft., that is, using the formula $V^2 = 2\,gs$, a velocity of a little over 36 ft. per second, or 25 miles an hour.

For a rainfall of ·04 the corresponding velocity is 50 miles per hour, force 9 on the Beaufort scale.

Further, we may remember that the whole mass of air to its upper limit is not involved in a cyclone, and since a smaller mass is involved, the velocity will be greater. Also the rain need not fall, the energy is supplied by the change from vapour to cloud, and the equivalent of ·04 in. of rain may be contained in a cloud of 1,000 ft. thickness or less.

Since the cyclones of our latitudes seldom give less than ·10 in. of rain along their track, and the tropical hurricanes frequently give 10·0 in. or more, the latent heat of condensation certainly can provide a most ample supply of energy. It does not follow that cyclones are necessarily generated and maintained in this manner; they present at the present time an unsolved problem, and it is certain that in some circumstances heavy rains do not produce wind. On the other hand, cyclones certainly prefer localities where there is a copious supply of moisture, and, personally, I believe that the chief motive and sustaining power is the heat produced by the condensation of vapour.

W. H. DINES.

WARM AND COLD SEASONS.

THE following classification of the last 65 years at Greenwich (reckoned as made up of Spring, Summer, Autumn and Winter, *i.e.*, March to February) may be of interest.

Call a season warm (W.) where two or three months are warm (*i.e.*, with mean temperature above the average); cold (C.) in the opposite case. Then we have:

	Spring.	Sum.	Autm.	Win.			
1.	W.	W.	W.	W.	...	'47, '65, '72, '95, '01	5
2.	W.	W.	W.	C.	...	'46, '57	2
3.	W.	W.	C.	C.	...	'59, '70, '78	3
4.	W.	C.	C.	C.	...	'54, '64, '67, '80	4
5.	C.	C.	C.	C.	...	'53, '60, '79, '88, '89, '92	6
6.	C.	C.	C.	W.	...	'45, '50, '02	3
7.	C.	C.	W.	W.	...	'66, '83, '98	3
8.	C.	W.	W.	W.	...	'55, '58, '61, '76, '97, '00	6
9.	W.	C.	C.	W.	...	'41, '71, '81	3
10.	W.	C.	W.	W.	...	'43, '48, '62, '82	4
11.	W.	W.	C.	W.	...	'42, '68, '84, '93, '96, '04, '05 ...	7
12.	C.	W.	W.	C.	...	'86, '99	2
13.	C.	W.	C.	C.	...	'56, '75, '85, '87	4
14.	C.	C.	W.	C.	...	'44, '69, '91	3
15.	C.	W.	C.	W.	...	'51, '52, '73, '77	4
16.	W.	C.	W.	C.	...	'49, '63, '74, '90, '94, '03	6
							65

We find that years with a preponderance of warm seasons number 24; cold seasons, 20; two warm, two cold, 21.

I would invite comment on these facts.

ALEX. B. MACDOWALL.

THE WEATHER AT GREENWICH IN MAY, 1906 & 1907.

I HAVE made notes of above, and the similitude of the two months being so striking, I thought it worthy of record. Here are the figures:—

	Mean. bar.	Thermometer. max.	min.	mean.	Rainfall. inches.	Wind. miles.	Sun. hours.	Air. frosts.
1906 ...	29·70	62·3	44·3	53·3	1·56	8410	153	1
1907 ...	29·70	62·2	44·3	53·25	1·56	8283	159	1

Thus barometer, thermometer, and rainfall readings are practically identical, and wind and sunshine nearly so. The only variation is in the number of days' rainfall, which was 12 in 1906 and 18 in 1907.

ARTHUR F. PARBURY.

Haslemere, Surrey, 6th June.

THE GLOOM OF APRIL, 1907.

THE unusual character of the past month is well shown for London by the fact that the quarter hours of day-darkness (*i.e.*, during office hours, 9 a.m. to 5 p.m., see this Magazine for January, 1902, Vol. **36**, p. 194) were more than double the total of the previous 9 years of records, and even the number of days was as great.

This is shown by the following table :—

	1898.	'99.	1900.	'01.	'02.	'03.	'04.	'05.	'06.	'07.	Total. 9 yrs.	Total. 10 yrs	Mean. 9 yrs.	Mean. 10yrs
Days, April	0	1	1	1	1	1	1	3	0	10	9	19	1	1·9
Quarterhrs., Apr.	0	3	1	1	11	2	2	4	0	57	24	81	2·6	8·1
Do., Apr. to Sep.	2	11	5	14	21	42	9	(8)	5	—	134	—	14·9	—

The mean number of quarter hours in the various months (as given in the above-mentioned note) ran : October, 30 ; November, 91½ ; December, 131 ; January, 110 ; February, 35 ; March, 26 ; and total, April to September, 17. Hence the past April brought more darkness (mainly due to fog) than the average of any but the three foggiest months.

J. EDMUND CLARK.

8, Chiswell Street, E.C., 1st May, 1907.

THUNDERSTORM OF JUNE 1st.

A HEAVY thunderstorm, accompanied by a deluge of rain, passed over this district between 11.35 a.m. and 12.15 p.m. on the above date. The storm came up from the N.W., and working round by the W. and S.W., passed away towards S. and S.E. along the North Downs.

Thunder was first heard at 11.35 a.m. At 11.44 a.m. the interval between lightning and thunder was two seconds. At noon the very vivid forked lightning was followed instantaneously by thunder. At 0.7 p.m. a vivid flash of forked lightning, bright blue in colour, was seen due W., the interval to thunder being 3 seconds. Thunder was last heard in the S. at 0.15 p.m.

Rain fell between 11.50 a.m. and 0.10 p.m., and the amount measured was ·80 in. in 20 minutes. Very variable airs to a dead calm prevailed during the storm. Between 2.20 p.m. and 2.45 p.m. thunder was again heard in the S.W. and W., and between 5.45 p.m. and 6 p.m. in the N.E.

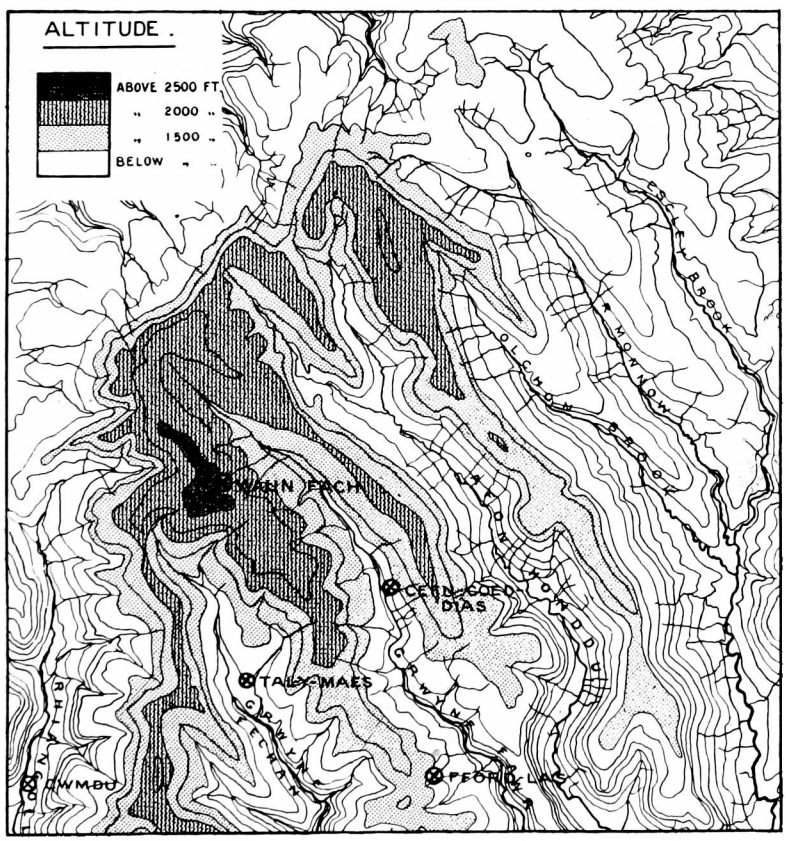
SPENCER C. RUSSELL, F.R.Met.Soc.

Epsom, June 1st, 1907.

RAIN GAUGES ON THE BLACK MOUNTAINS.

By Rev. R. P. Dansey.

This mountain group lies in the counties of Brecon, Monmouth and Hereford, and is of great extent. It consists of four long ridges, each eight to twelve miles in length, separated by parallel valleys running S.S.E. The two northern of these give birth to streams which run north and then east, draining into the Monnow and then the Wye. The two southern run south and find their way into the Usk. The map below shows the contour lines for each 100 feet up to 1000 feet, and thereafter for each 250 feet to the summit. The closeness of the contour lines is of course proportional to the steepness of the mountain slope, and the rivers which are shown and named indicate the lowest lines of the valleys. The view of the mountains from the east is not very impressive, only the outline of the long straight ridge which forms the first rampart of the mountains being visible, low on the horizon, from my Rectory at Kentchurch, about 10 miles distant to the east.



BLACK MOUNTAINS.

ENGLISH MILES.

0 1 2 3 4

Dr. H. R. Mill having kindly provided me with a rain gauge, I set it up on the 11th of March last at the point marked on the map as Waun Fach, at a height of 2500 feet, that is to say about 160 feet below the summit. The setting up of this long Bradford pattern rain gauge was not without difficulty; I had to carry it on my bicycle for 20 miles, the last 10 of which were extremely rough. When the bicycle had done its work it had taken me—and in bad places I had taken *it*—to Capel-y-ffin, over 1000 feet above sea level, in the valley of the Afon Honddu, close to the monastery of Father Ignatius. After a few minutes' rest, the "2nd" ridge to the S.W., over 2000 feet, had to be climbed, and a descent made into the next parallel valley, that of the Grwyne Fawr, and then the final ascent of Waun Fach, the summit of the whole group, was at last achieved.

My wife went with me to take the first measurement, on April 1st —the double journey making 40 miles on bicycles and 8 to 10 miles of walking, including the crossing of a ridge over 2000 feet twice, and dropping down to 1500 feet and then up again to 2660 feet, not a bad day's work for a lady. It was in the glorious anti-cyclonic weather which lasted over Easter, and the heat was like midsummer. The amount found in the gauge was 1·90 in., which had accumulated since March 11th; for the corresponding period at Kentchurch the fall had been ·51 in. The gauge had not been interfered with, and some stamp paper with which I had sealed the funnel to the body of the gauge was still intact. The temperature on the summit was 56°, and the maximum here during the day had been 61°; and on March 11th the temperature on the summit had been 30° at 3 p.m., and the maximum at Kentchurh 44°. On April 1st there was one drift of snow still left in a corrie half-a-mile N.W. of the gauge.

I photographed the gauge, and my wife washed her face with the 1·90 in. of rain and said it was delicious. The photograph is reproduced on next page, and shows the flatness of the grassy ridge on which it is placed, and of two of the other ridges to the N.N.E., one of which we had crossed.

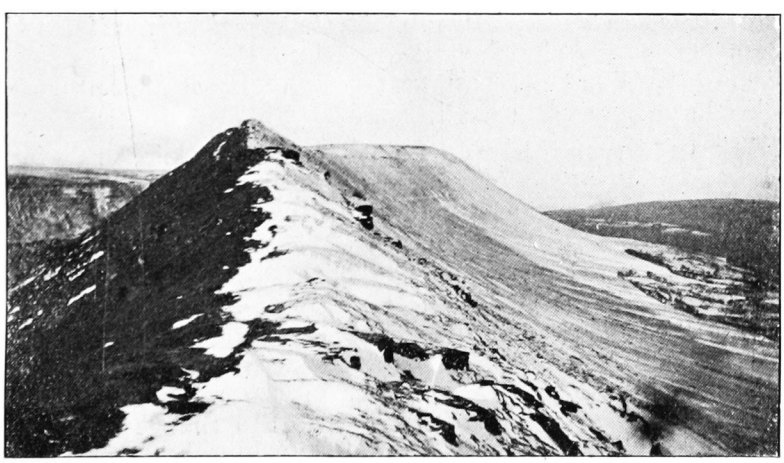
The second photograph is that of a ridge which joins the first ridge at the extreme N.N.W. end of the group; this small ridge, which is called the Black Hill, will be seen on the map forming the north-easterly side of the upper valley of the Olchon Brook. It is three or four miles in a straight line from the rain gauge, which is on the third or highest ridge. In the photograph the snow has all gone on the S.W. side while the N.E. side remains covered.

The first complete month's measurement with the Waun Fach gauge was made on April 30th, when I was accompanied in visiting it by my brother. The weather was very bad, but decidedly interesting. On the summit there was a furious gale and a temperature of 34° at 3 p.m., and it would have been almost impossible to have measured the water in the gauge without the help I fortunately had. The fall for April was found to be 5·85 in., against 3·33 in. at Kentchurch, which I may mention is only 210 feet above sea level. On our way

back to Capel-y-ffin a thick snow blizzard came on; when crossing the second ridge, that between the Grwyne Fawr and Afon Honddu valley, at 2000 feet, temperature fell from 40° to 32°, and in a few minutes the whole place was white down to about 1500 feet. The storm lasted for about 20 minutes.

THE WAUN FACH RAIN GAUGE.

On June 1st the measurement for May was successfully taken, and a fine and warm day among extremely bad weather favoured me, the thunderstorms which prevailed in the London district not extending near here. The May fall was found to be 5·30 in., against 3 08 in. at Kentchurch.



THE BLACK HILL RIDGE OF THE BLACK MOUNTAINS.

The Black Mountains form an extremely interesting group from the point of view of rainfall, and from other points of view as well. They are too vast and inaccessible for the tourist, and the raven breeds unmolested in some of the rocky crags above Capel-y-ffin and elsewhere. Three rain gauges, originally set up by the London County Council, are being maintained in the lower valleys by Dr. Mill, their positions being shown on the map at Ffordlas, Tal-y-maes and Cwm-ddu. One has been started, I believe, by Mr. Baker-Gabb, of Abergavenny, at Cefn-coed-dias, and I understand that there are some gauges for a proposed water works in one of the valleys, but their positions are not known. It would, however, be very interesting to obtain further records on the ridges and especially at the upper ends of the valleys. If two gauges were set up between Capel-y-ffin and the summit gauge, they would all be "in the day's work" or rather "walk," so to speak, and would entail hardly any extra trouble, if means could be found to provide the instruments. Of course, in stations like this it is hopeless to expect a daily record of the rainfall, and it is impossible even to be sure of a monthly record read with absolute regularity on the first day of every month, but still, monthly readings, varying it may be by a day or two from the fixed date, can give extremely important information on the subject. Winter will be the most difficult time for obtaining systematic records; last winter the "Rain Gauge Ridge" was, I believe, never entirely without snow from November to April, and in severe frost a shaving lamp to melt the frozen water in the gauge will probably be a necessary article of equipment.

REVIEWS.

Verwandlung von Fahrenheitgraden in Centesimalgrade und umgekehrt [Conversion of Fahrenheit degrees into Centigrade degrees and *vice versa*]. Von G. HELLMANN (Berlin). From the Naturwissenschaftliche Rundschau XXI., No. 38. Pp. 2.

DR. HELLMANN in this note points out a convenient rule for the conversion of the two thermometer scales—double the centigrade temperature, subtract one-tenth of this and add 32 to get the Fahrenheit temperature. Subtract 32 from the Fahrenheit temperature, halve this result and add one-tenth and one-hundredth of that half to get the centigrade temperature. The rules are very simple and obvious, and must have occurred to many workers. That for converting centigrade into Fahrenheit temperatures was published in the article *Thermometer* in the ninth edition of the *Encyclopædia Britannica* nearly twenty years ago, though Dr. Hellmann was not aware of this.

The Physiography of the River Nile and its Basin. By CAPTAIN H. G. LYONS, Director-General Survey Department. Cairo National Printing Department, 1906. Size 11 × 7½, pp. viii. + 412.

THIS is a remarkable work dealing with the physiography of the Nile, from its sources south of the Victoria Nyanza to its delta in the Mediterranean Sea. It deals in successive chapters with the different sections of the river and its chief tributaries, and the references to the very large literature of the subject appear to be exhaustive. The numerous maps are produced with a clearness and delicacy of colouring that reflect the greatest credit on the Survey Office at Cairo, and are far superior to those illustrating most Government publications in this country.

Captain Lyons gives monthly rainfall maps for the whole Nile Basin, which although necessarily founded on very incomplete data, succeed at least in bringing such data as do exist into a very reasonable relationship. The climate of the various parts of his vast region is treated very fully, most of the available figures being quoted, while the utmost use is made of the long records of the height of the Nile at different seasons. The book culminates in a masterly study of the variations of the Nile floods for the period of about 175 years throughout which the records appear to be trustworthy and comparable. With this unique set of observations of a quantity which is in the most intimate dependance on climate it is a little disappointing to learn that no regular alternation of high and low flood is to be found. Captain Lyons sums up the relations of meteorological conditions and the floods of the Nile as follows:—

"Turning to the meteorological conditions, atmospheric pressure in north-eastern Africa appears to vary inversely as the rainfall of Abyssinia, and a similar relation between pressure and rainfall has been demonstrated in other parts of the globe. The distribution of pressure in the summer months in the light of recent information shows that the Asiatic low pressure in the monsun season is abruptly terminated about the meridian of the Nile valley, and to the west of this there is probably an area of almost equal pressure intervening between it and the high pressure of the Azores action-centre, while in summer a low pressure area may lie to the south-west. The encroachment of this high pressure on the eastern part of North Africa may produce there the unfavourable conditions of high pressure, which have been recognised as coinciding with deficient rainfall on the Abyssinian tableland, while conversely its withdrawal so as to allow of deepening or extension of the low pressure trough, probably acts favourably towards the conditions of precipitation in Abyssinia.

"It seems that the two principal factors to be considered are, firstly, the strength of the south-east trade winds as they progress from the south to the north of the equator, along the eastern coast of Africa, and secondly, the excess or defect of atmospheric pressure in the area represented by Aden, Cairo, Beirut, and the region lying to the west of this; the sub-equatorial rainfall in early summer must also be considered.

"So far as our knowledge goes at present it may be said that :—

"(1). Generally speaking the curve of Nile floods varies inversely as the mean barometric pressure of the summer months, high pressures accompany low floods, and low pressures accompany high floods.

"(2). These pressure variations show a great similarity over wide areas, but seem to be to some extent dependent upon the position of the Azores high pressure 'action-centre.'

"(3). Taking the monthly means of atmospheric pressure, this relation is even more clearly shown, and pressure above or below the normal in months of the rainy season of Abyssinia coincides closely with deficiency or excess of rainfall.

"(4). Taking the 37 years—1869 to 1905—in six years out of seven a very fairly accurate prediction of the flood from month to month could have been made, and there seems a reasonable probability that further and more detailed study of the conditions above described may increase the reliability.

"(5). The effect of excessive sub-equatorial rainfall in April and May in the neigbourhood of Zanzibar, seems to have a distinctly prejudicial effect on Abyssinian rains."

Meteorological Observations at Stations of the Second Order. Published by the Authority of the Meteorological Committee. For the year 1901, and for the year 1902. (Size 10 × 10. Pp. xiv. + 180. Price 22s. 6d. each.) Edinburgh: Printed for H.M. Stationery Office.

Hourly Readings obtained from the Self-recording Instruments at four Observatories in connexion with the Meteorological Office. Published by the Authority of the Meteorological Committee. 1903, 1904, 1905. Three volumes. (Size 12 × 10. Pp. xiv.+ 198. Price 25s. each.) Printed for H.M. Stationery Office.

THE Meteorological Office has now come up to date in the matter of the publication of the volumes of "Hourly Readings," and we season our gratitude with the hope that the volumes of "Second Order" observations will soon be in an equally forward state. There is not much to be said as a rule of official publications, the successive volumes of which do not even vary in the number of their pages, but the last volume of Hourly Readings has an important announcement in the preface—viz., that the readings of the Robinson anemometer are now calculated on the basis that the movement of the wind is 2·2 times as fast as the speed of revolution of the cups. Former volumes gave the wind velocities calculated on the assumption that the wind moved with three times the speed of the cups. We accordingly warn those of our readers who are on the watch for evidence of secular change to deal warily with the wind records before and after 1905.

METEOROLOGICAL NEWS AND NOTES.

MR. ANDREW WATT, M.A., has, we learn with pleasure, been appointed Meteorological Secretary of the Scottish Meteorological Society, in succession to the late Dr. Buchan.

M. ST. C. HEPITES has retired from the direction of the Rumanian Meteorological Institute at Bukharest, after having held the office for twenty-three years. He is succeeded by M. I. St. Murat, but will continue to interest himself in the scientific work being carried on at the Institute.

"BRITISH RAINFALL, 1906," has now reached that stage of compilation when it is urgent that all returns not already received must be sent in within a week, if they are to be inserted in the general table of rainfall. It is now too late to utilize such returns for the various detailed discussions of rainfall data.

MR. WILLIAM GRIFFITHS, who died this month at Holyhead, aged 81, is described in the *Liverpool Daily Post and Mercury* as a great weather prophet. The notice states "that before steam became general, hundreds of sailing vessels used Holyhead Refuge Harbour, and it was the custom for the masters of these craft to be guided in their sailings by the advice of deceased as to the coming weather. Deceased was the author of some treatises on meteorology and chronology, which were favourably reviewed by the Press. . . . In 1863 he predicted the gale known locally as 'the three-fingered Jack gale,' when thirty-three vessels broke from their moorings at Holyhead and went upon the rocks, with disastrous results."

MESSRS. PASTORELLI AND RAPKIN have forwarded a specimen of their "Meteorological Register" for hanging up. Twelve perforated sheets, 8½ by 5½ inches in size, are provided with a cardboard back and pencil at top. The sheet is ruled in the upper half for a barometer curve and in the lower half for observations of direction of wind, rainfall, maximum, minimum, wet and dry thermometers; but only for one daily reading. The register is neat and attractive, and the price is one shilling.

AN ORIGINAL REMARK ABOUT THE WEATHER was recently asked for in a prize competition by the *Westminster Gazette*, and the following—one of which we have heard before—won the two prizes:—

(1.) The gods became bored with their quiet lives on stormless Olympus. Zeus, fearing the effects of excessive nectarism, and thinking gambling the lesser evil, instituted a celestial form of "rouge et noir," the stakes for him who should successfully prophesy to-morrow's weather. Since then he has kept them pleasantly amused.

(2.) It was particularly wet in parts of Scotland during August of last year. A gentleman who had a shooting in a Perthshire glen remarked to an old gamekeeper that during the month they had four good days. "Yes," said the old man, "but the Sabbath 'nippet' up three of them."

TEMPERATURE FOR MAY, 1907.

STATION.	COUNTY.	Lat. N.	Long. W. [*E.]	Height above Sea. ft.	TEMPERATURE. Max. °	Date.	Min. °	Date.	No. of Nights at or below 32°. Shade.	Grass.
		° ′	° ′							
Camden Square	*London*	51 32	0 8	111	82·3	12	35·9	20	0	1
Tenterden	*Kent*	51 4	*0 41	190	76·0	12	34·0	19,20	0	4
West Dean	*Hampshire*	51 3	1 38	137	73·0	12	31·0	19	1	7
Hartley Wintney	,,	51 18	0 53	222	77·0	12	32·0	18,19	2	6
Hitchin	*Hertfordshire*	51 57	0 17	238	79·0	12	32·0	19	1	...
Winslow (Addington)	*Buckinghamshr.*	51 58	0 53	309	80·0	12	32·0	19	1	3
Bury St. Edmunds (Westley)	*Suffolk*	52 15	*0 40	226	79·0	11	31·5	20	1	...
Brundall	*Norfolk*	52 37	*1 26	66	80·0	11	33·8	21	0	2
Winterbourne Steepleton	*Dorset*	50 42	2 31	316	66·8	12,27	29·0	21	2	5
Torquay (Cary Green)	*Devon*	50 28	3 32	12	69·0	26	36·9	20	0	0
Polapit Tamar [Launceston]	,,	50 40	4 22	315	69·2	28	30·1	20	2	5
Bath	*Somerset*	51 23	2 21	67	76·0	12	35·0	18	0	...
Stroud (Upfield)	*Gloucestershire*	51 44	2 13	226	76·0	12	42·0	18	0	...
Church Stretton (Woolstaston)	*Shropshire*	52 35	2 48	800	76·0	12	26·0	19,22	13	...
Coventry Kingswood	*Warwickshire*	1 30	52 24	340	68·0	6,25	35·0	18,21	0	...
Boston	*Lincolnshire*	52 58	0 1	25	81·0	12	35·0	5,18	0	...
Worksop (Hodsock Priory)	*Nottinghamshire*	53 22	1 5	56	80·6	12	30·3	22	2	9
Derby (Midland Railway)	*Derbyshire*	52 55	1 28	156	83·0	12	31·0	21	1	...
Bolton (Queen's Park)	*Lancashire*	53 35	2 28	390	70·4	12	33·4	22	0	4
Wetherby (Ribston Hall)	*Yorkshire, W.R.*	53 59	1 24	130	...	...	...	...	...	...
Arncliffe Vicarage	,, ,,	54 8	2 6	732	...	...	...	...	...	...
Hull (Pearson Park)	,, *E.R.*	53 45	0 20	6	80·0	11	35·0	22	0	10
Newcastle (Town Moor)	*Northumberland*	54 59	1 38	201	...	..	...	...	...	...
Borrowdale (Seathwaite)	*Cumberland*	54 30	3 10	423	69·5	24	34·3	2	0	...
Cardiff (Ely)	*Glamorgan*	51 29	3 13	53	..	...	...	...	...	...
Haverfordwest (High Street)	*Pembroke*	51 48	4 58	95	71·3	28	34·3	22	0	0
Aberystwyth (Gogerddan)	*Cardigan*	52 26	4 1	83	78·0	28	27·0	17	...	...
Llandudno	*Carnarvon*	53 20	3 50	72	...	...	...	...	...	...
Cargen [Dumfries]	*Kirkcudbright*	55 2	3 37	80	68·0	24	32·0	23	1	...
Lilliesleaf (Riddell House)	*Roxburgh*	55 31	2 46	550	...	...	...	...	...	...
Edinburgh (Royal Observy.)	*Midlothian*	55 55	3 11	442	64·5	13	34·8	2	0	2
Girvan (Pinmore)	*Ayr*	4 49	55 10	207	66·0	24,27	31·0	19	2	...
Glasgow (Queen's Park)	*Renfrew*	55 53	4 18	144	68·0	27	34·0	15,17	0	2
Tighnabruaich	*Argyll*	55 55	5 14	50	66·0	27	32·0	14,18	2	3
Mull (Quinish)	,,	56 36	6 13	35	68·0	26	...	...	...	...
Dundee (Eastern Necropolis)	*Forfar*	56 28	2 57	199	69·1	13	35·0	29	0	...
Braemar	*Aberdeen*	57 0	3 24	1114	...	...	...	...	...	...
Aberdeen (Cranford)	,,	57 8	2 7	120	63·0	10†	30·0	4	1	...
Cawdor (Budgate)	*Nairn*	57 31	3 57	250	...	...	...	...	...	...
Invergarry	*E. Inverness*	57 4	4 47	13c?	...	...	...	...	...	...
Loch Torridon (Bendamph)	*W. Ross*	57 32	5 32	20	...	...	...	...	...	...
Dunrobin Castle	*Sutherland*	57 59	3 56	14	61·0	11	34·0	19	0	0
Castletown	*Caithness*	58 35	3 23	100	69·0	26	30·0	3,4	4	...
Killarney (District Asylum)	*Kerry*	52 4	9 31	178	72·5	29	34·5	23	0	...
Waterford (Brook Lodge)	*Waterford*	52 15	7 7	104	...	..	...	...	...	...
Broadford (Hurdlestown)	*Clare*	52 48	8 38	167	72·0	27	32·0	4	1	...
Abbey Leix (Blandsfort)	*Queen's County*	52 56	7 17	532	66·0	26,27	...	...	...	...
Dublin (Fitz William Square)	*Dublin*	53 21	6 14	54	67·5	27	34·4	1	0	1
Ballinasloe	*Galway*	53 20	8 15	160	76·0	25,27	27·0	18	7	...
Clifden (Kylemore House)	,,	53 32	9 52	105	...	...	...	...	...	...
Crossmolina (Enniscoe)	*Mayo*	54 4	9 18	74	...	...	...	...	...	...
Seaforde	*Down*	54 19	5 50	180	71·0	27	32·0	22	1	2
Londonderry (Creggan Res.)	*Londonderry*	54 59	7 19	320	...	...	...	...	...	...
Omagh (Edenfel)	*Tyrone*	54 36	7 18	280	68·0	28	32·0	18	0	...

† and 11, 14, 23.

RAINFALL FOR MAY, 1907.

RAINFALL OF MONTH.							RAINFALL FROM JAN. 1.					
Aver. 1870-99.	1907.	Diff. from Av.	% of Av.	Max. in 24 hours.		No. of Days	Aver. 1870-99.	1907.	Diff. from Aver.	% of Av.	Mean Annual 1870-1899.	STATION.
in.	in.	in.		in.	Date.		in.	in.	in.		in.	
1·72	1·74	+ ·02	101	·28	7	17	8·54	8·01	— ·53	94	25·16	Camden Square
1·72	2·01	+ ·29	117	·31	2	18	9·59	8·47	— 1·12	88	28·36	Tenterden
1·86	2·15	+ ·29	116	·54	13	19	10·59	9·52	— 1·07	90	29·93	West Dean
1·79	1·65	— ·14	92	·36	11	16	9·70	9·23	— ·47	95	27·10	Hartley Wintney
1·87	3·19	+1·32	170	·85	13	21	8·37	8·97	+ ·60	107	24·66	Hitchin
2·06	2·96	+ ·90	144	1·40	13	17	9·29	8·83	— ·46	95	26·75	Addington
1·85	3·52	+1·67	190	1·01	13	18	8·28	10·21	+ 1·93	123	25·39	Westley
1·74	2·57	+ ·83	148	·65	31	19	8·23	10·66	+ 2·43	130	25·40	Brundall
2·02	2·17	+ ·15	107	·34	1	18	14·04	11·95	— 2·09	85	39·00	Winterbourne Stpltn
1·96	3·48	+1·52	178	·51	6	21	12·92	11·55	— 1·37	85	35·00	Torquay
1·98	3·06	+1·08	155	·45	9	21	13·33	13·28	— ·05	100	38·85	Polapit Tamar
2·09	2·97	+ ·88	142	·58	13	17	10·72	9·73	— ·99	91	30·75	Bath
2·10	1·77	— ·33	84	·26	22	18	10·60	8·62	— 1·98	81	29·85	Stroud
2·62	3·05	+ ·43	116	·58	6	19	11·85	10·73	— 1·12	91	33·04	Woolstaston
2·11	4·80	+2·69	227	2·37	13	18	10·15	9·73	— ·42	96	29·21	Coventry
1·73	3·08	+1·35	178	·75	14	18	7·82	8·09	+ ·27	103	23·30	Boston
2·01	2·91	+ ·90	145	·44	31	23	8·57	8·21	— ·36	96	24·70	Hodsock Priory
1·96	3·84	+1·88	196	·67	14	19	8·78	9·86	+ 1·08	112	26·18	Derby
2·46	4·38	+1·92	178	·79	30	21	13·54	14·90	+ 1·36	110	42·43	Bolton
1·90	3·66	+1·76	193	·78	31	19	9·25	9·99	+ ·74	108	26·96	Ribston Hall
3·36	5·41	+2·05	161	1·35	30	22	22·78	25·34	+ 2·56	111	60·96	Arncliffe Vic.
1·95	3·91	+1·96	201	·92	31	23	9·12	9·28	+ ·16	102	27·02	Hull
1·89	4·36	+2·47	231	1·10	14	21	9·32	9·75	+ ·43	105	27·99	Newcastle
7·26	10·18	+2·92	140	2·56	1	21	50·39	46·14	— 4·25	92	132·68	Seathwaite
2·55	2·83	+ ·28	111	·48	3	18	14·66	12·89	— 1·77	88	42·81	Cardiff
2·53	3·58	+1·05	141	·73	30	16	17·06	14·05	— 3·01	82	47·88	Haverfordwest
2·44	3·79	+1·35	155	1·59	6	13	14·66	14·85	+ ·19	101	45·41	Gogerddan
1·85	1·64	— ·21	89	·31	30	19	10·18	7·66	— 2·52	75	30·98	Llandudno
2·60	5·44	+2·84	209	·86	1	17	16·07	17·63	+ 1·56	110	43·43	Cargen
2·07	...	...	...	...	...	...	11·44	...	...	...	33·04	Riddell House
...	2·75	...	...	·77	21	19	...	7·74	...	...	...	Edinburgh
2·73	4·66	+1·93	171	·99	30	22	17·57	..	...	...	48·87	Girvan
2·36	4·08	+1·72	173	·66	21	18	12·24	14·94	+ 2·70	122	35·80	Glasgow
3·21	4·68	+1·47	146	·53	1, 21	16	20·89	22·75	+ 1·86	109	57·90	Tighnabruaich
2·91	3·74	+ ·83	128	·92	1	19	20·29	21·45	+ 1·16	106	57·53	Quinish
1·88	4·20	+2·32	223	1·05	31	19	9·94	9·80	— ·14	99	28·95	Dundee
2·29	3·73	+1·44	163	...	...	...	12·50	13·11	+ ·61	105	36·07	Braemar
2·20	4·36	+2·16	198	·97	31	22	11·60	11·24	— ·36	97	33·01	Aberdeen
2·03	3·29	+1·26	162	·84	21	17	9·68	10·95	+ 1·27	113	29·37	Cawdor
2·84	4·09	+1·25	144	1·21	1	10	21·87	26·78	+ 4·91	122	56·00	Invergarry
5·05	4·52	— ·53	90	1·75	1	17	31·26	40·85	+ 9·59	131	86·50	Bendamph
2·02	2·18	+ ·16	108	·78	31	12	11·31	13·65	+ 2·34	121	31·60	Dunrobin Castle
...	1·32	...	...	·55	21	14	...	12·90	...	...	...	Castletown
2·95	4·04	+1·09	137	·62	6, 10	18	22·70	15·77	— 6·93	69	58·11	Killarney
2·11	...	..	...	...	...	...	14·58	...	...	...	39·30	Waterford
2·09	2·66	+ ·57	127	·44	29	16	11·60	12·45	+ ·85	107	33·47	Hurdlestown
2·27	3·51	+1·24	155	·64	6	19	12·77	12·04	— ·73	94	35·19	Abbey Leix
1·94	3·21	+1·27	165	1·12	6	17	9·93	9·49	— ·44	96	27·75	Dublin
2·49	3·71	+1·22	149	·84	6	20	13·23	13·55	+ ·32	102	37·04	Ballinasloe
4·61	4·69	+ ·08	102	1·20	30	13	28·96	24·70	— 4·26	85	80·23	Kylemore House
2·93	5·07	+2·14	173	·84	6	22	18·79	20·53	+ 1·74	109	50·50	Enniscoe
2·45	5·73	+3·28	234	1·39	30	21	14·20	14·99	+ ·79	106	38·61	Seaforde
2·48	4·01	+1·53	162	·66	30	19	14·15	20·59	+ 6·44	146	41·20	Londonderry
2·43	3 60	+1·17	148	...	...	..	12·98	16·64	+ 3·66	128	37·85	Omagh

SUPPLEMENTARY RAINFALL, MAY, 1907.

Div.	STATION.	Rain. inches	Div.	STATION.	Rain. inches
II.	Abinger Hall	3·26	XI.	Rhayader, Tyrmynydd	...
,,	Ramsgate	2·38	,,	Lake Vyrnwy	3·92
,,	Hailsham	3·11	,,	Llangyhanfal, Plâs Draw	2·53
,,	Crowborough, Uckfield Lodge	2·89	,,	Criccieth, Talarvor	2·30
,,	Totland Bay, Aston Honse.	1·65	,,	Llanberis, Pen-y-pass	7·78
,,	Emsworth, Redlands	2·87	,,	Lligwy	2·67
,,	Alton, Ashdell	2·12	,,	Douglas, Woodville	3·54
,,	Newbury, Welford Park	2·14	XII.	Stoneykirk, Ardwell House	4·18
III.	Harrow Weald, Hill House.	1·69	,,	Dalry, The Old Garroch	6·08
,,	Oxford, Magdalen College..	2·37	,,	Langholm, Drove Road	5·64
,,	Bloxham Grove	3·16	,,	Moniaive, Maxwelton House	5·37
,,	Pitsford, Sedgebrook	4·93	XIII.	N. Esk Reservoir [Penicuick]	3·30
,,	Huntingdon, Brampton	4·32	XIV.	Maybole, Knockdon Farm..	3·85
,,	Wisbech, Bank House	1·89	XV.	Campbeltown, Witchburn	5·91
IV.	Southend Water Works	2·14	,,	Inveraray, Newtown	4·96
,,	Colchester, Lexden	2·29	,,	Ballachulish House	7·56
,,	Newport, The Vicarage	2·84	,,	Islay, Eallabus	4·29
,,	Rendlesham	1·92	XVI.	Dollar Academy	4·66
,,	Swaffham	2·44	,,	Loch Leven Sluice	3 69
,,	Blakeney	2·51	,,	Balquhidder, Stronvar	5·01
V.	Bishops Cannings	2·27	,,	Perth, Pitcullen House	3·04
,,	Ashburton, Druid House	5·67	,,	Coupar Angus Station	3·34
,,	Okehampton, Oaklands	4·20	,,	Blair Atholl	2·90
,,	Hartland Abbey	3·08	,,	Montrose, Sunnyside Asylum	5·73
,,	Lynmouth, Rock House	3·28	XVII.	Alford, Lynturk Manse	4·55
,,	Probus, Lamellyn	2·27	,,	Keith Station	2·98
,,	Wellington, The Avenue	...	XVIII.	N. Uist, Lochmaddy	3·24
,,	North Cadbury Rectory	1·58	,,	Alvey Manse	1·69
VI.	Clifton, Pembroke Road	2·61	,,	Loch Ness, Drumnadrochit.	2·09
,,	Ross, The Graig	2·26	,,	Glencarron Lodge	3·92
,,	Shifnal, Hatton Grange	3·18	,,	Fearn, Lower Pitkerrie	2·49
,,	Cheadle, The Heath House.	3·72	XIX.	Invershin	3·79
,,	Blockley, Upton Wold	2·78	,,	Altnaharra	2·44
,,	Worcester, Boughton Park.	2·74	,,	Bettyhill	2·05
VII.	Market Overton	4·14	XX.	Dunmanway, The Rectory..	6·27
,,	Market Rasen	2·95	,,	Cork	3·58
,,	Bawtry, Hesley Hall	3·16	,,	Darrynane Abbey	4·00
VIII.	Neston, Hinderton Lodge	2·79	,,	Glenam [Clonmel]	3·44
,,	Southport, Hesketh Park	3·23	,,	Ballingarry, Gurteen	2·58
,,	Chatburn, Middlewood	3·80	,,	Miltown Malbay	3·14
,,	Cartmel, Flookburgh	5·29	XXI.	Gorey, Courtown House	4·18
IX.	Langsett Moor, Up. Midhope	5·48	,,	Moynalty, Westland	4·41
,,	Scarborough, Scalby	3·54	,,	Athlone, Twyford	2·78
,,	Ingleby Greenhow	3·58	,,	Mullingar, Belvedere	3·53
,,	Mickleton	3·38	XXII.	Woodlawn	4·10
X.	Bardon Mill, Beltingham	3·91	,,	Westport, Murrisk Abbey..	...
,,	Ewesley, Fallowlees	4·65	,,	Collooney, Markree Obsy..	4·24
,,	Ilderton, Lilburn Cottage..	3·82	,,	Mohill	4·42
,,	Keswick, York Bank	4·86	XXIII.	Enniskillen, Portora	3·55
XI.	Llanfrechfa Grange	3·69	,,	Warrenpoint, Summer Hill.	2·72
,,	Treherbert, Tyn-y-waun	4·87	,,	Banbridge, Milltown	3·47
,,	Carmarthen, The Friary	3·59	,,	Belfast, Springfield	4·09
,,	Castle Malgwyn [Llechryd].	3·77	,,	Bushmills, Dundarave	3·97
,,	Plynlimon	5·95	,,	Stewartstown, The Square..	4·03
,,	Tall-y-llyn	...	,,	Killybegs	4·84
,,	New Radnor, Ednol	4·06	,,	Horn Head	4·52

METEOROLOGICAL NOTES ON MAY, 1907.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Temp. for Temperature; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; TS for Thunderstorm; R for Rain; H for Hail; S for Snow.

LONDON, CAMDEN SQUARE.—A normal month in most respects. The temp., although the mean was 54°·3, or 0°·3 above the average, was as a rule low, except during short periods in the second and fourth weeks. Polar winds rather preponderated and the amount of cloud was abnormally large. Duration of sunshine 137·0* hours, and of R 35·9 hours.

CROWBOROUGH.—A wet month, the R being ·84 in. above the average of 36 years, reducing the deficiency during 1907 to ·15 in. The month opened with boisterous, cold and unsettled weather till 4th, and cold and warm periods alternated throughout. Severe TS from 8.30 to 11 p.m on 25th. Mean temp. 51°4.

BURY ST. EDMUNDS.—Very wet; the R had been exceeded only twice in May during 59 years.

NORTH CADBURY.—Excessively cloudy and rather windy. The day temp. was somewhat low but the nights were too cloudy to be cold. It was rainy but not wet.

COVENTRY.—A remarkable R began at about 10 p.m. on 13th, lasting continuously for 43 hours: total 2·78 in. We only just escaped a heavy flood.

SOUTHPORT.—Very dull and decidedly wet, with an exceptional prevalence of easterly winds, sea breezes being largely in defect. There were frequent trying changes of temp., but the mean, 50°·7 was only 0°·4 below the average. Duration of sunshine 151·5* hours, or 61 hours below the average. R 1·13 in. above the average. Duration of R 78·0* hours.

BOLTON.—Except for short intervals the temp. was much below the average, the mean being 48°·6, or 0°·8 below. R was decidedly in excess and the largest in May since 1886. Duration of sunshine, 99·7* hours, or 47·1 hours below the average. The wind during a great part of the month was from the E.

HAVERFORDWEST.—Wet and stormy till 11th, then fine, but cold throughout and vegetation backward. Duration of sunshine 170·7* hours.

DOUGLAS.—If May, 1906, could be describable as "deplorable," May, 1907, deserves a stronger condemnation—it was execrable! Beginning with a continuance of a N.W. gale of over 70 hours' duration, cruelly blackening young foliage and fruit blossom, it was exceptionally windy throughout. R daily till 12th, often heavy and always cold, followed by a week of fine though cold weather, then excepting four warmer and calm days from 24th to 27th, it was again wet and gloomy with bitter E. winds to the end.

COUPAR ANGUS.—R 1·27 in. above the average. Mean temp. 46°·3, or 2°·0 below the average.

DRUMNADROCHIT.—Remarkably cold with E. or N. wind. Frosts on several nights and new S frequently on the higher hills. R ·04 in. below, and rain days equal to, the average.

CASTLETOWN.—Except a few days from 8th to 14th and again from 24th to 26th, the month was harsh and cold with prevailing N.E. and E. winds.

DUNMANWAY.—Very wet for May, especially in the first fortnight and the last three days; from midnight on 28th to 10 a.m. on 31st it rained with scarcely a break. From 14th to 24th was dry and cold with night frosts, but 27th and 28th were very hot.

MILTOWN MALBAY.—Icy gales with H and R prevailed till 15th, thence to 21st was frosty, dry and cold. More genial with a spurt in vegetation till 27th, but cold and rainy at the end.

DUBLIN.—Cold, generally cloudy and cheerless. N.E. and E. winds predominated. R fell to the amount of 2·52 in. on the first 12 days, of which 1·12 in. fell in a TS on 6th. Mean temp. 51°·4, or 0°·7 below the average.

BANBRIDGE.—R 1·47 in. above the average of 45 years.

* Campbell-Stokes.

Climatological Table for the British Empire, December, 1906.

STATIONS. (*Those in italics are South of the Equator.*)	Absolute. Maximum. Temp.	Date.	Absolute. Minimum. Temp.	Date.	Average. Max.	Min.	Dew Point.	Humidity.	Absolute. Max. in Sun.	Max. on Grass.	Total Rain. Depth.	Days.	Aver. Cloud.
	°		°		°	°	°	0-100	°	°	inches		
London, Camden Square	55·1	3	20·9	27	42·0	32·9	35·4	90	76·0	17·7	2·21	19	...
Malta	...	...	...	...	...	...	...	...	...	...	...	...	...
Lagos	94·0	7	71·0	27	87·7	74·9	75·4	81	150·0	68·0	·58	2	6·1
Cape Town	92·3	6	50·5	22	75·0	58·1	54·8	68	...	...	3·23	10	4·9
Durban, Natal ...	89·3	4	60·3	7	81·5	66·0	...	...	154·3	...	6·96	19	5·9
Johannesburg	79·8	20	47·0	2	72·8	53·3	51·8	72	154·8	44·5	4·59	16	5·4
Mauritius	88·9	18	65·1	19	84·7	69·5	65·3	69	152·3	57·1	4·52	14	6·6
Calcutta...	82·3	13	52·7	23	78·2	58·0	57·0	70	143·5	45·6	·00	0	3·5
Bombay...	91·1	9	69·3	15	86·3	71·3	65·8	67	136·4	59·9	·00	0	0·7
Madras	84·9	23	63·4	3	81·6	71·4	70·5	85	135·4	58·0	16·43	13	6·3
Kodaikanal	67·8	4	43·6	12	60·4	48·3	47·7	81	135·2	30·6	6·19	18	6·6
Colombo, Ceylon ...	90·6	22	70·2	27	86·1	73·2	71·7	81	150·0	66·2	1·91	12	4·8
Hongkong	78·4	21	50·3	26	68·9	59·6	54·2	70	130·2	...	·66	4	4·9
Melbourne	96·8	22	44·3	26	75·6	53·6	51·0	65	155·0	35·0	·74	7	5·5
Adelaide	108·7	9	43·0	4	83·8	59·6	51·0	48	161·0	41·6	1·54	5	3·9
Coolgardie	105·8	6	51·0	24	91·6	62·6	49·2	53	175·0	49·2	·25	3	2·8
Sydney	89·9	17	55·0	27	76·8	62·4	58·4	64	131·2	46·1	1·61	14	4·9
Wellington	69·3	31	46·2	30	65·2	54·1	49·2	68	138·0	36·0	1·14	7	3·5
Auckland	...	...	...	..	...	...	...	...	...	...	...	...	...
Jamaica, Negril Point.	88·9	10	64·3	26	83·7	68·9	65·2	69	...	...	·10	1	...
Trinidad	...	...	...	...	...	...	...	...	...	...	...	...	...
Grenada	85·4	11	70·8	22	83·0	73·0	74·1	84	146·2	...	7·40	21	3·4
Toronto	48·9	31	-8·1	8	29·8	15·2	21·4	86	56·8	-15·0	1·54	5	7·3
Fredericton	43·2	22	-24·3	10	24·7	6·0	...	81	...	...	1·51	4	6·0
St. John's, N.B. ...	49·8	21	-9·3	9	32·0	15·2	...	82	...	...	3·05	11	6·4
Victoria, B.C.	52·5	22	28·3	27	45·1	37·4	...	93	...	...	3·82	18	8·3
Dawson	8·0	26	-55·0	5	-17·4	-27·1	...	...	...	...	·00	0	5·2

Johannesburg.—Rainfall above the average.

Mauritius.—Mean temp. of the air 1°·7, dew point 2°·3, relative humidity 1·8 per cent., and R ·37 in. below, averages. Mean hourly velocity of wind 10·0 miles, or 0·8 below average.

MADRAS.—R over three times the normal for the month, and on the 13th more than 4 inches fell in 24 hours. TS on one day. Bright sunshine 124·3 hours.

KODAIKANAL.—Bright sunshine 129 hours. A stormy month.

COLOMBO.—Mean temp. of air 79°·4, or 0°·2 above, of dew point 0°·8 above, and R 3·86 in. below, averages. Mean hourly velocity of wind 7·6 miles.

HONGKONG.—Mean temp. of air 63°·5. Bright sunshine 194·4 hours. Mean hourly velocity of wind 11·8 miles.

Adelaide.—Mean temp. of air 0°·3 above, and R ·71 in. above, averages.

Sydney.—Mean temp. of air 0°·3 above, and R ·88 in. below, averages.

Wellington.—R 1·90 in. below the average, a dry and sunny month.